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ABSTRACT

This manual presents a guide that organizes and coordinates the information necessary to plan and write an instructional unit that contains behaviorally stated objectives and to prepare an evaluation that measures what is taught. The manual contains (1) a list of general objectives, (2) a list of behavioral objectives, (3) the class procedure, (4) assignments, (5) instruction aids, (6) an evaluation (examination), (7) an evaluation of the instructor's objectives, and (8) a bibliography. The chapter on instruction aids is the longest chapter and contains a pretest, an explanation of planning cycle, and six papers describing how to write behavioral objectives. The desired results hoped for in this workshop are not only that teachers will learn to plan and write instructional units but also that teachers will come to see the purpose and value of such a tool in teaching. (RC)

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Writing an Instructional Unit

with

BEHAVIORALLY STATED OBJECTIVES

A Five-Day In-Service Workshop Instructional Unit

Compiled by

CHARLES R. GREEN

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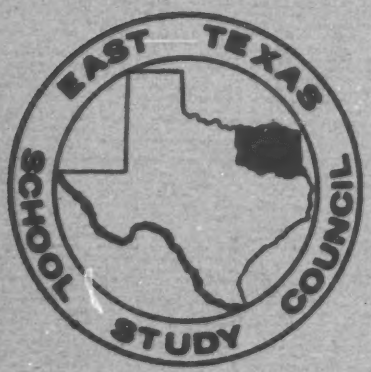

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PREFACE

A five-day in-service workshop instructional unit in writing instructional units with behaviorally stated objectives is presented here. There are several items to be considered in teaching this unit. First, space is important. It is necessary to have one general meeting room large enough to hold the total number of teachers involved in the workshop plus several rooms in which small groups or individuals may work. Second, it would be well if the teachers had a chance to read Preparing Instructional Objectives by Robert F. Mager before the workshop begins. It is also necessary that each teacher have a copy of Preparing Instructional Objectives on the first day of instruction. Third, this unit contains a list of suggested references which were compiled to help people work on their individual needs or special interests pertaining to the requirements of this workshop. Fourth, the unit is designed to allow each teacher to write an instructional unit in his own field and for the class he teaches. Last, the teacher will use textbooks, resource materials, instructional aids, and equipment available in his school system in planning and writing his instructional unit.

The desired results hoped for in this workshop are not only that teachers will learn to plan and write instructional units but also that teachers will come to see the purpose and value of such a tool in teaching. Thus, if success is granted to the ultimate, the teacher will on his own prepare an instructional unit with behaviorally stated objectives for each unit of each course he teaches.

INFORMATION, EXPLANATION, AND NEEDS

This manual was compiled to present a guide that organizes and coordinates the necessary information to plan and write an instructional unit which contains behaviorally stated objectives and to prepare an evaluation that measures what is taught.

The thought behind the study is that the "average" teacher does not have the time or perhaps the facilities and materials to do research in these areas. We have tried to present information in a simple and concise way. Resource materials were held to a minimum. However, there are certain materials that must be purchased or obtained in some other manner. The instructor for a group of teachers would have to have the following materials:

1. Robert F. Mager's book, Preparing Instructional Objectives. Published by Fearon Publishers in Pala Alto, California. Cost $1.75.

2. Developing and Writing Behavioral Objectives. Published by Educational Innovators Press, Inc., Tucson, Arizona. Cost $1.95.

3. Three film strips: (1) Educational Objectives, (2) Evaluation, and (3) Teaching Units and Lesson Plans. These filmstrips may be purchased from Vimcet Filmstrip-Tape Programs, P. O. Box 24714, Los Angeles, California. Cost $15.00 each. These strips may also be borrowed from the Region Service Centers.

The above mentioned are a must. Mager's book and the filmstrips are used in classwork and are a major part of the course. Developing and Writing Behavioral Objectives contains the answers to

the test on pages 41 to 66 in the manual and includes other information an instructor should know about writing behavioral objectives.

In order to help the instructor in gathering and arranging needed materials, the following list is offered:

1. Materials needed for the first day:
   a. Pre-test (provided in manual).
   b. Transparency of planning cycle with an explanation of the cycle (provided in the manual).
   c. Books and resource materials. This refers to all texts, references, and resource materials one would need or normally use in planning a teaching unit in his field.
   d. Robert Mager's book, Preparing Instructional Objectives.
   e. Filmstrip, Educational Objectives.
   f. Article, "Instructional Accountability," (provided in manual).
   g. Article, "Performance Verbs," (provided in manual).
2. Materials needed for the second day:
   a. Article, "Behavioral Objectives, A Needed Perspective," (provided in manual).
   b. Article, "Describing Behavior for Objectives," (provided in manual).
   c. Review "Elements and Variables in Behavioral Objectives," (provided in manual).
   d. Filmstrip, Evaluation.
   e. Filmstrip, Teaching Units and Lesson Plans.
3. Materials needed for the third day:
   a. Article, "Writing Objectives," (provided in manual).
4. Materials needed for the fourth day: none.
5. Materials needed for the fifth day:
   a. Evaluation forms (provided in the manual).

The only materials the teacher enrolled in the class needs are: (1) Mager's book, Preparing Instructional Objectives, (2) resource materials normally used in teaching a particular unit, and (3) a copy of this manual.

The East Texas School Study Council has permission to reproduce the articles in this manual. Therefore, an instructor could reproduce copies of the needed materials from

this manual and give them to each teacher enrolled in the workshop. A limited number of copies of the manual are available from the East Texas School Study Council.

In summary, the instructor must have this manual, Mager's book, Preparing Instructional Objectives, Developing and Writing Behavioral Objectives, by Armstrong, et al., and the three filmstrips from Vimcet Associates. The total cost to the school for these items is $48.70. If one borrowed the filmstrips from the Region Service Center or elsewhere, the cost could be cut to $3.70.

The cost for the individual teacher would be $1.75 for Mager's book. An additional $1.95 for Armstrong, et al., would be a beneficial expenditure and is recommended.

MATERIALS AND EQUIPMENT

A. Equipment

1. Overhead projector
2. Record player
3. Tape recorder
4. Filmstrip projector
5. Screen
6. Chalkboard and chalk
7. Extension cords
8. Typewriter

B. Materials

1. Tapes
2. Transparencies
3. Filmstrips
4. Books
5. Resource material

BASIC GOAL

To enable teachers to prepare an instructional unit in a course of study which is based upon behaviorally stated objectives.

GENERAL OBJECTIVES

1. To stress the importance of planning in constructing an instructional unit.
2. To show the need and value of behaviorally stated objectives.
3. To familiarize the student with instructional objectives.
4. To emphasize the importance of "performance" verbs.
5. To develop an understanding of behavioral domains and variables.
6. To teach knowledge and understanding of the instructional dimension.
7. To teach the student a knowledge and understanding of the institutional dimension.
8. To develop skill in writing goals, general objectives, and behavioral objectives.
9. To familiarize the student with program structure.
10. To develop an instructional unit.

BEHAVIORAL OBJECTIVES

1. General objective: To stress the importance of planning in constructing an instructional unit.

   Behavioral objective:

   A. The student will be able to name and explain the steps of the planning cycle.

2. General objective: To show the need and value of behaviorally stated objectives.

   Behavioral objective:

   A. The student will be able to list at least 5 reasons for writing an instructional unit which contains behaviorally stated objectives.

3. General objective: To familiarize the student with instructional objectives

   Behavioral objectives:

   A. Given one or more instructional objectives, the student will be able to select those stated in performance terms.

   B. Given a well-written instructional objective, the student will be able to identify the portion of it that defines minimum acceptable performance.

   C. Given one or more performance (test) items, the student will be able to select those appropriate to the evaluation of the objectives.

4. General objective: To emphasize the importance of performance verbs.

   Behavioral objectives:

   A. Given a list of verbs, the student will be able to underline the ones that are performance verbs.

   B. The student will be able to write ten behaviorally stated objectives using performance verbs.

5. General objective: To develop an understanding of behavioral domains and variables.

Behavioral objectives:

A. The student will be able to list and define the three behavioral domains.

B. The student will be able to list at least 3 variables for each behavioral domain.

6. General objective: To teach knowledge and understanding of the instructional dimension.

Behavioral objectives:

A. The student will be able to define instructional dimension.

B. The student will be able to list and explain the five specific variables of instructional dimension.

C. Given a list of instructional variables, the student will be able to identify each by name.

7. General objective: To teach knowledge and understanding of the institutional dimension.

Behavioral objectives:

A. The student will be able to define institutional dimension.

B. The student will be able to name and define the six variables of the institutional dimension.

C. Given a list of institutional variables, the student will identify each by name.

8. General objective: To develop skill in writing a goal, a general objective, and behavioral objectives.

Behavioral objective:

A. The student will be able to write a goal, a general objective, and a behaviorally stated objective in each domain of behavior.

9. General objective: To familiarize the student in program structure.

Behavioral objective:

A. The student will be able to list the eleven major parts of an instructional unit.

10. General objective: To construct an instructional unit.

Behavioral objectives:

A. The student will be able to write a program goal.

B. The student will be able to write general objectives for the program.

C. The student will be able to write behaviorally stated specific objectives.

D. The student will be able to predict assignments.

E. The student will be able to outline class procedures (activities).

F. The student will be able to construct an examination.

G. The student will be able to arrange the parts of the instructional unit into a logical order.

CLASS PROCEDURE

First Day

8 to 8:50 a.m.: Introduction - Items to discuss and activities to perform.

1. Give pre-test - provided in manual
2. Show and explain overlay of planning cycle
3. Discuss reasons for planning
   a. discipline
   b. coordination of subject
   c. confidence
   d. organization
   e. individual interest
   f. teaching method
   g. accountability
4. Name and define equipment and materials needed
   a. notebook
   b. pen and pencil
   c. books
   d. typewriter
   e. resource material
5. Discuss schedule - Go over class procedure orally - then stress assignments.
6. Discuss goal and final product - as outlined on p. 13- Detailed discussion on first period of 3rd Day.

9:00 to 10:50 a.m.: Read Mager's book, Preparing Instructional Objectives

Activity - Each student* reads the book at his own rate of speed. If he is unable to finish at the end of the allotted time, he must finish on his own time.

* The student in this workshop is a teacher in the public school. However, he is referred to in class procedure as the student.

11:00 to 11:50 a.m.: Discussion of Mager's book, Preparing Instructional Objectives

Activities - Teacher leads discussion and answers questions. Students work test in back of book. Students check answers and discuss.

12:00 to 1:00 p.m.: Lunch

1:00 to 1:50 p.m.: Show film strip entitled - Educational Objectives. Discuss.

2:00 to 2:50 p.m.: Discuss instructional accountability and performance verbs.

Activities - Hand out to each student a copy of "Instructional Accountability" and a copy of the list of performance verbs. Students read the article "Instructional Accountability" - 10 minutes to read. Discuss the article for 20 minutes. Discuss performance verbs for 20 minutes.

3:00 to 3:50 p.m.: Place in groups of 4 to 5. Have these groups write 2 or more good behaviorally stated objectives for 20 minutes. For the remainder of the period write examples on the board (one or two) from each group.

Second Day

8:00 to 8:50 a.m.: Each student will be given a copy of "Behavioral Objectives, A Needed Perspective."

Activities - Each student reads the article after which the teacher leads a discussion which points out needs and values of behavioral objectives. About 20 minutes should be allotted for reading and 20 minutes for discussion. Ask students to write questions to be discussed when they have finished reading the article.

9:00 to 10:50 a.m.: Each student will be given a copy of "Describing Behavior for Objectives."

Activities: Individual study. Each student will read and work test.

11:00 to 11:50 a.m.: Discuss program structure. Check test and discuss activities. Break into groups of 5. These groups should be in the same program field or at least

closely associated. Hand out a copy of "Elements and Variables in Behavioral Objectives" to each student. (To be used for a review.) Assignment for group. Write a goal, a general objective and at least 3 behavioral objectives. (More if time allows).

12:00 to 1:00 p.m.: Lunch

1:00 to 1:50 p.m.: Let each group (one at a time) write their example on the chalkboard. The class then discusses the strengths and weaknesses of the objectives.

2:00 to 2:50 p.m.: Film strip and tape: Evaluation for 30 minutes; discuss, 20 minutes.

3:00 to 3:50 p.m.: Filmstrip and tape: Teaching Units and Lesson Plans for 30 minutes; discuss, 20 minutes.

Third Day

8:00 to 8:50 a.m.: Explain the steps in writing an instructional unit.

1. Selection of subject - time - length - etc.
2. Materials and equipment
3. Goal and preface
4. General objectives
5. Behavioral objectives
6. Assignments
7. Class procedure
   a. activities
   b. plan for each class
   c. allow for individualization
   d. flexible
8. Work sheets - teaching aids - reading list - book reports
9. Evaluation (examination)
   a. test what you have taught.
   b. show the objective or objectives each part of the test is testing.

10. Table of contents

11. Bibliography

9:00 to 9:50 a.m.: Hand out "Writing Objectives." Students will read individually, 20 minutes. Then discuss as a review.

10:00 to 12:00 p.m.: The students will work in groups of 4 or 5 (preferably in same field) in planning the outline for the unit.

Each individual will write his own instructional unit. However, he may discuss it with others. (swap ideas)

The teacher will help groups or individuals as needed.

12:00 to 1:00 p.m.: Lunch

1:00 to 1:30 p.m.: Discuss evaluation - How to construct a test? Must test what you teach - use that in this manual as a guide to discuss.

1:30 to 2:50 p.m.: Continue as above, with writing an instructional unit.

3:00 to 3:50 p.m.: Check work outlines. Teacher shows several outlines to class. The teacher and the class point out strengths and weaknesses.

Fourth and Fifth Days

Individual and/or group study, planning, research, and writing of instructional unit. The teacher will be available to help students. The teacher will check projects as they are finished. Upon completion of one unit, a student may begin preparation of another instructional unit.

It is hoped that students will see the value in writing instructional units; thereby, prepare enough units to cover the entire year.

As noted in the planning cycle, continuous change is important;

therefore, the instructional units should be up-dated every year.

The last hour of the last day may be used to critique the in-service program and the teacher. This information is to be used to make improvements.

ASSIGNMENTS

1. Read Robert F. Mager's book: Preparing Instructional Objectives
2. Work the test in the back of Mager's book: Preparing Instructional Objectives
3. View film strip: Educational Objectives
4. Read the article: "Instructional Accountability" by Raymond Bernabei and Sam Leles
5. Study and know the list of performance verbs.
6. Read the article: "Behavioral Objectives, a Needed Perspective" by Lucille B. Strain
7. Read: "Describing Behavior Objectives"
8. Study hand-out: "Elements and Variables in Behavioral Objectives"
9. View filmstrip: Evaluation
10. View filmstrip: Teaching Units and Lesson Plans
11. Read: "Writing Objectives"
12. Write an instructional unit. (This unit should be written according to the guide given the first period of the third day).

Pre-Test

1. List three reasons for writing an instructional unit with behaviorally stated objectives.

2. List at least four steps in planning an instructional unit.

3. Is the following instructional objective stated in performance terms? "Given a list of verbs, the student will be able to underline the ones that are performance verbs."

4. List four verbs that are commonly used in writing behaviorally stated objectives.

Multiple choice

Circle the letter of the correct answer.

1. Measurement Technique:

   a. content
   b. value
   c. observation
   d. objective

2. Visible activity displayed by a learner:

   a. teacher
   b. behavior
   c. observation
   d. order

Pre-test (continued)

3. An intent communicated by a statement describing a proposed change in a learner:

   a. objective
   b. program
   c. content
   d. behavior

4. According to Bloom's Taxonomy domain could refer to:

   a. cognitive
   b. affective
   c. psychomotor
   d. all of the above

5. An institutional variable is:

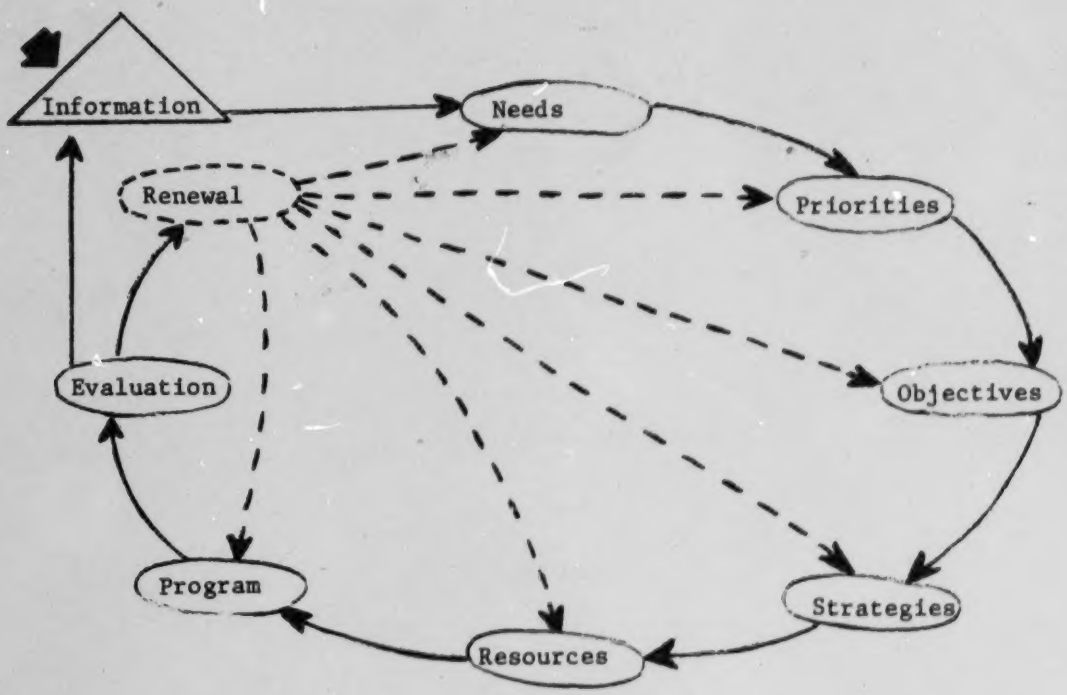
   a. teacher
   b. method
   c. content
   d. organization

6. An effective domain variable is:

   a. frequency
   b. knowledge
   c. value
   d. evaluation

This test should be given the first period of the first day. The instructor should take it up and keep it until the last class on the last day. However, there is no need for the instructor to grade the test. He should simply check the paper to see individual weaknesses. The class should discuss the test when it is returned to see what they have or have not learned.

PLANNING CYCLE



EXPLANATION OF PLANNING CYCLE

The information (data) in the triangle refers to all the knowledge we have which pertains to the problem we are to attempt to solve.

The needs refer to what one wishes to accomplish. In our particular case, we want to develop an instructional unit.

Priorities, then, would deal with our goal to prepare an instructional unit with behaviorally stated objectives.

Objectives, the next step, deal or refer to the general and specific objectives needed to obtain our goal.

Strategies are our class procedures, activities, and teaching methods used to achieve our objectives.

Resources are the materials and equipment used in helping to achieve our objectives.

The program is the combination of the needs, priorities, objectives, strategies, and resources into a written guide. The instructional unit is a program.

Evaluation is the examination given. It also involves an evaluation of self to see how and what we are teaching.

Renewal means a look at the program after we have used it. Then changes should be made as needed.

A Point of View. . .

INSTRUCTIONAL ACCOUNTABILITY

by

Raymond Bernabei and Sam Leles

"Instructional accountability is not only a legitimate concern for public support, but it is also indispensable to professional growth in education."

There are currently many proposals to improve teaching. Most seek improvement and change through indirect means. Such proposals advocate teaching-learning improvement through a restructuring of content or changes in schedule arrangements, class size, and physical plant facilities.

The Role of the Teacher

Behavioral objective writing seeks improved instruction by raising the performance level of teachers. This approach presumes that the instructional role of the teacher is indispensable to significant improvement in the learning process. Therefore, behavioral objective writing is designed for and directed to teachers. While behavioral objective writing is intended to increase instructional competence, it does not relieve teachers from the responsibility to assess student needs and to prescribe objectives that are relevant, timely, and meaningful.

Specifically, behavioral objective writing is proposed as a methodological development that provides new and different perspectives about teacher accountability. It provides

ways to relate the assessment of student learnings to explicitly stated objectives that are measurable. The distinction between writing behavioral objectives, as a methodological scheme, and knowing about behavioral objectives, as a body of knowledge, is basic to the use of instructional competence as developed herein.

As a methodological tool, behavioral objective writing identifies the teacher's role in setting forth learning objectives. In prescribing objectives for a group or for an individual student, the teacher in effect says, "As a result of my instruction, students will be able to...."

By its very nature, behavioral objective writing makes evident that whatever it is that students are to learn is a function of objectives prescribed by the teacher. Objectives prescribed in this way are likely to establish goal clarity or goal visibility for student and teacher alike. Furthermore, it shifts student energies in the direction of learning and away from "psyching out" teachers. It also shifts instructional responsibility toward the teacher and away from the student.

Learning Responsibility

Behavioral objective writing affects at least two aspects of instruction that need attention. One is the problem of teacher attitude as it relates to identifying who is or is not responsible for learning success in the school and classroom. The other is the problem of determining and measuring instructional performance. In practice, if not in theory, it is

generally assumed that responsibility for learning rests with the learner rather than with the teacher. Educational folklore and some literature suggests differently. But, careful observations and experiences indicate teachers generally claim credit for successful learnings while abstaining from or shifting responsibility whenever learnings fail or are in doubt.

This is not surprising. Furthermore, it is not meant as criticism of teachers. It is, however, an accurate description of educational reality. But more important, such practices can lack formal mechanisms and procedures necessary to using feedback data for modification, change, and improvement.

Educational reality shows classroom practitioners also lack the measurable criteria and techniques needed to provide valid and reliable assessments about learning and teaching. This does not mean lack of student measurement and evaluation classrooms. To the contrary, schools offer more than ample evidence of efforts to assess students in instructional settings. Numerous efforts to assess students occur in the absence of predetermined, identifiable, and measurable learning objectives.

Through the years, the assumption persists that because teachers teach, students learn. But, unless the teaching-learning process makes specific provision (a) to identify and prescribe what it is that is to be learned and then undertakes (b) to measure and determine these learnings, the explanations which justify successes or failures in school will continue to be ambiguous, contradictory, and indeterminable.

Teaching Accountability

Until recently, much of the potential and limitation in behavioral objective work was seen in terms of learner outcomes. Perhaps this was to be expected since the term objectives, measurable or unmeasurable, filled well the tradition of looking upon educational progress in terms of student outcomes. Persistent work with objectives now indicates a different and perhaps a more powerful use of behavioral objective writing. The potential is in promoting instructional accountability.

In many places, instructional accountability is already an emotion-laden issue. It promises to become more intense as controversies involving school decentralization, teacher-board confrontations, and skyrocketing education costs gain momentum. Instructional accountability is basic to all of the above issues. It is only a matter of time before these and similar questions are stripped of the facade which disguises the real controversy. Eventually, attempted and achieved student learnings will be related to instructional efforts. When that occurs, teacher accountability will be established. The teachers who identify and prescribe measurable learning objectives for students offer tangible evidence of accountability for themselves and their work.

Sources of Behavioral Objectives

The sources of behavioral objectives are broad, underlying factors teachers take into account when identifying

student learning objectives. However, sources are unlike criteria and components used to write behavioral objectives. Sources represent great variability whereas criteria and components are usually fixed and stable. Another distinction is that sources constitute external or "outside" factors used to write behavioral objectives, while criteria and components are integral, internal qualities that are "inside" factors useful to behavioral objective writing.

Typically, sources of behavioral objective writing include such considerations as (a) the nature and needs of learners, (b) the nature and needs of society and of the community to which learnings relate, and (c) the structure and nature of the subject or content to be learned.

Instruction based on behavioral objectives begins by considering how well and to what extent these sources are reflected in the objectives prescribed for students. This is clearly a function of teaching. This suggests instructional competence as another "outside" source of behavioral objectives and one in which widespread differences exist. How teachers perceive themselves and their students and how teachers use knowledge about content and about society serve as the basis from which behavioral objectives are prescribed and written.

Criteria for Behavioral Objectives

Earlier work in behavioral objectives has been very important to education. These efforts have helped to identify and recognize objectives that are behavioral because of specified

criteria. Among these criteria are those which require that objectives be stated in terms of terminal behavior desired and that minimum levels of acceptable performance be specified.

These criteria are vital to behavioral objective writing. But instructional practices are such that these two criteria cannot be generalized and applied to all cases of objective writing. Descriptions of terminal behaviors desired and the specifying of minimum levels of acceptable performance are predicated upon the ability of teachers to effectively use sources of behavioral objectives. Therefore, it is instructional competence that determines what "outside" sources are going to be used and how these sources are to be used to write behavioral objectives.

Components of Behavioral Objectives

Now, it is possible to give consideration to a number of other factors essential to writing behavioral objectives. These factors are called components. Consideration of "what" to learn identifies the knowledge domains (Cognitive, Affective, Psychomotor) as the first component essential to behavioral objective writing. Concern for "how" to learn identifies the second essential component, which is the mental operation necessary to learning the behavior desired and specifying an objective. Consideration for mental operations present in learning objectives reveals the third component essential to behavioral objective writing, that of time. The knowledge domains reveal mental operations and corresponding language that clearly

indicate varying intervals of time for designated learnings of objectives.

As mental operations and time intervals are verbalized into statements of objectives, language, especially in the form of action verbs, becomes apparent as the fourth component essential to behavioral objective writing.

It should be pointed out that two components, time intervals and language, reveal variabilities and limitations that truly show the importance of the teacher's role in writing and using objectives to improve student learning. If individual differences are to be accounted for through instructional practices, then the objectives we write and use must also reflect this variability.

Using the four components--knowledge domains, mental processes, time intervals, and language--writers of behavioral objectives now can exercise analytical precision to writing measurable objectives.

It is really instructional competence that determines the considerations to be used and the extent to which these influence the behavioral objectives one writes. For this reason, writing behavioral objectives is classed as a methodological development. The explicit intent of behavioral objective writing is to increase the competence and performance of teachers.

PERFORMANCE VERBS

Soundly conceived objectives are essential for successful teaching. Unfortunately, it is very easy to state broad, high sounding, thoroughly desirable objectives that defy appraisal. Appreciation of science, understandings of gravity, command of scientific method, and etc. are typical objectives. However, precisely what is meant by these phrases? How do you know when you have achieved these objectives? What exercises or experiences contribute to the achievement of objectives of this nature?

Objectives should be statements of specific behaviors which a student finishing the exercise or unit should exhibit. The specific behavior is not exhibited by students who have not completed the course or exercise or unit.

To assist you in stating measured objectives a slightly modified version of a list of performance verbs are listed below. You are to use these verbs or others of a similar nature in writing objectives.

1. Identify:

   The individual selects (by pointing, picking up, or other response) the correct object of a class, in response to its class name. For example: "Show me the

frog," when presented a set of small animals or animal pictures; "Pick up the red triangle," when presented with a set of paper cut-outs representing different shapes. This category of performance also includes identifying object properties (such as rough, smooth, straight, curved, etc.) and in addition, kinds of change such as an increase or decrease in size and etc.

2. Distinguish:

   Identifying under conditions in which the objects or events are potentially confusable (square, rectangle) or when two contrasting identifications (such as right, left) are involved.

3. Name:

   Supplying the correct name (orally or in written form) for a class of objects or events, i.e. "What is this three dimensional object called?" Answer: "Cone."

4. Construct:

   Generating a construction or drawing which identifies a designed object or set of conditions, that is, beginning with a line segment the question is asked: "Complete this figure to represent a triangle."

5. Order:

   Arranging two or more objects or events in proper order in accordance with a stated category, that is, "Arrange these moving objects in order of their speed."

6. Describe:

   Generating or naming all the necessary categories of

objects, object properties or event properties that are relevant to the description of the designed situation. That is, the question is of the form, "Describe this order," and does not limit the categories which may be mentioning them, as in the question, "Describe the color and shape of this object."

7. State a Rule:

   Makes a verbal statement, (not necessarily in technical terms) which conveys the meaning of a rule or principle, including the names of the proper classes of objects or events in correct order. That is, "What is the test for determining whether this surface is flat?" The answer requires the mention of the application of a straight edge, in various directions to determine touching all along the edge.

8. Apply a Rule:

   Using a learned principle or rule to derive an answer to a question. The answer may be correct identification, the supplying of a name or some other kind of response. The question is stated in such a way that the individual must employ a rational process to arrive at the answer.

9. Demonstrate:

   Performing the operations necessary to the application of a rule or principle, i.e., "Show how you would tell whether this surface is flat." The answer requires

that the individuals use a straight edge to determine touching of the surface at all points and invarious directions.

10. Interpret:

Translating raw data (observations, charts, tables, graphs, etc.) in a scientifically verifiable manner to narrative form (oral and written). Given a graph: showing the change with time of the speed of an object or reaction, the question is: "At what point is the reaction slowest?" "Most rapid?" "Stopped?". Alternatively, the student could be asked, "Describe the source of the reaction."

11. Predict:

Using a rule or principle to predict an outcome (or to infer some consequences) that is, "What will happen to the boiling point of water if the operation of boiling is carried out on a high mountain?"

12. Classify:

To place objects, words, or situations into categories according to defined criteria for each category. That is, the student could be asked to classify the members of a family according to criteria of relationship to one another. It would be necessary that he have the criteria defined in order to do this.

13. Define:

To stipulate the requirements for inclusion of an object, word, or situation in a category or class. Elements of

one or both of the following must be included: (1) the characteristics of the words, objects, or situations that are included in the class or category, (2) the characteristics of words, objects, or situations that must be excluded from the class or category. To define is to set up criteria for classification. See Classify.

14. Diagram:

To construct a drawing with labels and with a specified organization (see organization) to demonstrate knowledge of that organization; that is, the student could be asked to diagram the flow of legislation through Congress.

15. Estimate:

To assess the dimension of an object, series of objects, event, or conditions without a scale or measuring device. Logical techniques of estimation such as are involved in mathematical interpolation may be used. See Measure.

16. Evaluate:

To classify according to prescribed standards of quality, objects, or situations. It is necessary for the criteria of classification to contain an indication of "goodness." That is, the categories must be so defined as to indicate to the evaluator which of the categories between the two extremes. That is, the student would be asked to classify the quality of given government tax legislation according to the principle of capitalization. See Classify and Define.

17. Label:

See Name, Identify.

18. Locate:

To identify the position of an object, place or event in relation to specified other objects, places, or events. The student could be asked to locate a city on a map by stating its latitude and longitude, its position near another city, its position in relation to a coastline, etc. A student could also be asked to locate a particular desk in his classroom by stating the row it is in and the ordinal position from the front of the room. The student could be asked to locate the time of an event in history by naming events that immediately preceded and followed it or by merely giving the date of the event.

19. Measure:

To demonstrate application of a standard or unstandardized scale or measuring device to an object, series of objects, events, or conditions according to practices accepted by those who are skilled in the use of the device or scale. The student could be asked to measure the scale distance between two points on a map for which a scale is given. The student could be asked to measure the temperature of air in a room given a thermometer. He could be asked to measure the time elapse from the beginning of an event to its end, given a watch.

20. Organize:

To arrange in order according to specified criteria according to conventional or logical practice. This class of activity differs from order in that a definite sequence is not implied. The end result of activity, that is, the organized product need not be arrived at by pursuing a particular sequence related to action. The student could be asked to organize a research study in which several types of organization would be accepted. The steps taken to arrive at the organization would be neither specified nor demonstrated.

List of common verbs:

list -- recite -- say -- state -- tell -- write.

These verbs indicate the form of communication expected rather than the type of behavior that would indicate possession of knowledge, process, or operation. They may be used judiciously to supplement any of the behavioral verbs in the foregoing list, but not supplant them in behavior objectives.

BEHAVIORAL OBJECTIVES: A NEEDED PERSPECTIVE

by

Lucille B. Strain

The crescendo attending use of behavioral objectives for remedying educational ills is becoming increasingly audible. In California, the present movement toward planning, programming, budgeting system (PPBS) as a basis for educational funding is giving impetus to the importance of developing program and instruction objectives. Educational accountability with respect to showing value for money spent and results for time utilized is becoming a real and immediate concern. Many current efforts toward individualization of instruction necessitate clear statement of behavioral changes expected of learners involved. A subtle implication in many of these movements is that objectives stated in behavioral or performance terms can lift education from its characteristic depths of vagueness and imprecision to heights of clear definition and precise results.

It is true that the results of educational efforts have been left, too often, to chance. Administrators, in many cases, have been too content to accept their roles of leadership without answering the basic question, "Leaders toward what?" Too many teachers have been prone to go through unspecified motions of "having classes" without demanding evidence of

productivity. As a total group, educators have tended to be too willing to allow outcomes of education to remain vague and often hidden by copious and ambiguous terminology. That there is need for changes in thinking and in overt behavior to help overcome these and other shortcomings in education is incontestable.

There is some danger, however, that excessive preoccupation with behavioral objectives can divert too much attention away from other variables important in achieving educational effectiveness.

At present, administrators and teachers in many individual schools, or in entire school districts, are focusing considerable effort upon mass production of objectives. Similarly, some groups are establishing "banks" of objectives in various subject fields to be drawn upon by potential users. There are some questionable aspects of these endeavors. How relevant, for instance, are such objectives in terms of meeting needs of individual learners in their own unique learning environments? What provisions are being made for continuity of learning from one level of education to another? Are learners' personal inclinations and abilities to inquire into the scope of a topic or subject being unduly restricted? Questions such as these suggest the urgency of seeing behavioral objectives in their proper perspective to total educational concerns.

In a suggested proper perspective, objectives stated in terms

of behavioral change, or in terms of performance expected, seem to portend promise, for improvement of many facets of education. New ideas and innovative practices are in order, for example, for improvement of evaluation of schools and of instructional performances. True professionalism in education requires that educators become accountable to the general public and to learners for what is recognized and accepted as their unique responsibilities. Learners' changes in the desired directions should characterize results of activities generated in classroom situations. Several considerations are in order for development of a needed perspective.

Primarily, there should be recognition of, and agreement upon the nature and functions of behavioral objectives in increasing the effectiveness of education. Clearly, their nature varies according to whether they are planned to direct efforts by those responsible for the undertakings of an entire district, a particular school unit, or a classroom situation. Each educator must supply the conditions unique in his particular situation and role, and interpret the nature of objectives within this framework.

As to their function, objectives are tools to be utilized by those to whom they are pertinent and not the other way around. An authority on the subject has cautioned that formulation of objectives is not a mere ritual. Objectives function in determining what to do for a student. In the case of a district or a school this idea can be extended, logically, to include

help objectives can give in decision-making regarding needs relative to the learning situation.

There is need for integrity in the formulation and use of objectives. There is little virtue, if any, in authoring a collection of objectives with scant evidence that these are meaningful in particular situations.

A proper perspectives seems to suggest, furthermore, that objectives should be construed as constituting only a part of, and not the total result of, what is expected of an educational endeavor. Many desirable ends of education are not immediately visible in overt behavior. Objectives should release students to learn more. In the case of classroom instruction, or in cases of activities, district-wide or school-wide, carefully and realistically stated objectives need not preclude attainment of other desirable, although unstated ones. In any case, positive educational ends may be too numerous or, at a given moment, too nebulous to lend themselves to statement. Stated objectives, however, assure a respectable minimum attainment which helps to justify time, money, and effort expended in education.

Placing instructional objectives in perspective involves recognition of the lack of dependability precise time limits afford for realization of student's cognitive or affective achievements. Setting definite and exact time limits for completion of the learning act can be little more than an exercise in

guessing. To assume that the myriad ways by which individuals differ can be discounted or ignored is to be unrealistic. The advisability of setting precise time limits as a criterion for a well-stated objective might well be questioned by those responsible for instruction. Frustration is likely to be the only definite result in reckless application of time limits to all facets of instructional matters. The same is true when it comes to stating the number of, or percentage of, students in a group who will manifest a given change. Individual differences tend to negate any respectable level of accuracy in prediction of either the exact time or exact number of students who will achieve an objective.

Elimination of, or a de-emphasis upon time and precise numbers of learners to manifest a given behavioral change would likely increase the number of teachers who will state and use behavioral objectives to guide instruction. Unfortunately, too many teachers and other instructional leaders seem to show a preference for pursuing vague, general goals, rather than focusing their efforts toward achievement of specific objectives. Resistance to the formulation and use of behavioral objectives in instruction, however, might be decreased when impractical criteria are eliminated from the process of formulating them.

Finally, objectives seen in perpective clearly provide a workable basis for evaluation of instruction and other educational effort. Objectives are a means for helping teachers

utilize meaningful evaluation and instructional techniques. They are means, also, of helping administrators and other educators determine definite accomplishments. With objectives as a basis for evaluation, accountability can become a reasonable expectation.

Perspective depends upon seeing a part in terms of its relationship to the whole in which it exists. To be useful in educational improvement, behavioral objectives must be seen in relationship to other concerns in education.

In summary, the functional nature of objectives should be recognized by all educators in terms of their unique situations. Statements of objectives should be shorn of impractical criteria which tend to overshadow the values they are capable of helping attain. Behavioral objectives have great potential for giving positive direction to educational effort and for affording a tenable basis for evaluation of this effort. In perspective, behavioral objectives are not a panacea for any educational problems, but offer promise of improvement in aspects of education for which they are suited.

DESCRIBING BEHAVIOR FOR OBJECTIVES

The following twenty-five pages are reproduced from Developing and Writing Behavioral Objectives with permission from Educational Innovators Press, Inc., Tucson, Arizona. The East Texas School Study Council takes this opportunity to thank Educational Innovators Press, Inc., for allowing us to reproduce this material in our manual.

Evaluation as a process is best approached through objectives stated in behavioral terms. At this point in the development of the Structure, three domains of the Behavioral Dimension have been recognized for classifying objectives.[2] The behavioral domains are presented here to introduce to you these terms, their brief definitions, and provide examples. It should be noted, however, that behaviors cannot be easily separated from each other. The point is that one should begin to recognize that certain behaviors appear to be primarily associated with one domain rather than the others, according to the definitions.

[2]Benjamin S. Bloom et al. Taxonomy of Educational Objectives, Handbook I: Cognitive Domain. New York: David McKay Company, Inc., 1956.
David R. Krathwohl et al. Taxonomy of Educational Objectives, Handbook II: Affective Domain. New York: David McKay Company, Inc., 1956.

BEHAVIORAL DOMAINS AND VARIABLES

1. COGNITIVE DOMAIN Behaviors which place primary emphasis on the mental or intellectual processes of the learner. Variables are: knowledge, comprehension, application, analysis, synthesis, and evaluation.

2. AFFECTIVE DOMAIN Behaviors which primarily emphasize attitudes, emotions, and values of the learner and are usually reflected by interests, appreciations, and adjustments. This is a more nebulous area than the Cognitive Domain, but equally, if not more, important. Variables are: receive, respond, value, organization, and characterization.

3. PSYCHOMOTOR DOMAIN Behaviors which place primary emphasis on neuromuscular or physical skills and involve different degrees of physical dexterity. Variables are: frequency, energy, and duration.

TEST YOUR KNOWLEDGE
OF
THE BEHAVIORAL DIMENSION

In the statements below, on the spaces provided, mark the appropriate domain: Cognitive Domain (C), Affective Domain (A), or Psychomotor Domain (P).

____ 1. A pupil is provided with a word problem in math and is able to correctly apply the formula and solve the problem.

____ 2. A pupil develops the physical energy necessary to do cursive writing neatly and correctly.

____ 3. A pupil may demonstrate an interest in music by his response in taking an active role in music activities.

____ 4. A pupil demonstrates his knowledge of historical dates related to certain events.

____ 5. A pupil may show improvement in shooting free throws on a basketball court by frequency of practice during a set period of time.

____ 6. A pupil responds with a positive attitude toward reading as demonstrated by his eagerness to respond to reading activities.

SEMANTICS:
A PAIN IN COMMUNICATION

A problem of semantics arises when people attempt to describe or communicate behavior. The approach presented in this pack suggests that fourteen terms be utilized in describing the behavioral variables. They are:

COGNITIVE DOMAIN[3]

- Knowledge
- Comprehension
- Application
- Analysis
- Synthesis
- Evaluation

AFFECTIVE DOMAIN[4]

- Receive
- Respond
- Value
- Organization
- Characterization

PSYCHOMOTOR DOMAIN

- Frequency
- Energy
- Duration

[3] Op. cit. (Bloom)
[4] Op. cit. (Bloom)

COGNITIVE DOMAIN VARIABLES[5]

The cognitive domain, emphasizing the mental processes, begins with the concrete behavior of knowledge and continues through the more abstract processes of analysis and synthesis.

1. KNOWLEDGE - involves the recognition and recall of facts and specifics.
2. COMPREHENSION - the learner interprets, translates, summarizes, or paraphrases given material.
3. APPLICATION - involves the use of material in a situation in which it was originally learned.
4. ANALYSIS - involves separating a complex whole into its parts, until the relationship among the elements is made clear.
5. SYNTHESIS - involves combining elements to form a new original entity.
6. EVALUATION - involves acts of decision-making, judging, or selecting based on a given set of criteria. (These criteria may be objective or subjective.)

[5] Op. cit. (Bloom)

TEST YOUR KNOWLEDGE OF THE COGNITIVE VARIABLES

On the provided space to the left of each item write the correct term for the cognitive behavior.

____1. The student participating in an American Problems class will develop the ability to analyze the political structure of the United States as measured by a teacher-designed test.

____2. The student enrolled in the non-graded elementary school program will develop his ability to apply science concepts as determined by a teacher-designed test.

____3. The student enrolled in an American Government course will be able to evaluate the accuracy of statements in relation to situations in governmental settings as measured by a teacher-made examination.

____4. The student participating in a reading program will develop his ability to comprehend printed material as measured by teacher observation.

____5. The student enrolled in a seventh grade mathematics course will demonstrate his ability to synthesize as measured by the teacher's observation of his ability to design an original numeration system.

____6. The student enrolled in a general mathematics course will improve his knowledge of computational skills as measured by the arithmetic computation section of the Stanford Achievement Test.

If you did not correctly identify the six variables of cognitive behavior, review the terms and definitions.

AFFECTIVE DOMAIN VARIABLES

The affective behavioral variables are defined as the interest, attitudes, values, appreciations, and adjustments of the individual. In recent years we have reached a point in the evaluation process where we are concerned not only with the knowledge gained, but with the willingness of the student to identify himself with a given subject. The Affective Domain, emphasizing the emotional processes, begins with the simple behavior of receiving and responding and continues through the complex process of characterization.

1. RECEIVING - the learner is aware of or passively attending to certain phenomena and stimuli (i.e., listening).
2. RESPONDING - the learner complies to given expectations by attending or reacting to certain stimuli or phenomena (i.e., interests).
3. VALUING - the learner displays behavior consistent with a single belief or attitude in situations where he is not forced to comply or obey (i.e., internal commitment consistent with external behavior).
4. ORGANIZATION - the learner is committed to a set of values as displayed by his behavior (i.e., successful internalization of values).
5. CHARACTERIZATION - the total behavior of the learner is consistent with the values he has internalized (i.e., philosophy of life - totally behaving as you believe).

TEST YOUR KNOWLEDGE
OF
THE AFFECTIVE VARIABLES

In the following exercise, try to recall the five appropriate terms for the affective variables. Write on the provided space to the left of each item the correct term for the affective behavior.

____1. The teacher enrolled in a Philosophy of Education course will develop a characterization of a social system in education which will be reflected in his continual work toward the improvement of instruction in his school district, as measured by instructor observation.

____2. Teachers using Introductory Algebra course materials will develop a positive interest toward the teaching of mathematics as measured by their responses to an attitude inventory.

____3. The student enrolled in music education will receive an awareness of different types of music as determined by his ability to rank these types of music in order of their presentation in class.

____4. The teacher enrolled in an in-service education program on the teaching of mathematics will develop an organization of a value system as measured by the Edward's Personal Preference Schedule.

____5. The teacher enrolled in a teaching methods course will develop a value for a certain teaching technique as measured by his ability, without being asked, to discuss the factors which makes it a good method for him.

If you did not correctly identify the five variables of affective behavior, review the terms and definitions.

PSYCHOMOTOR DOMAIN VARIABLES

The psychomotor variables describe those behaviors which involve neuromuscular coordination. Handwriting and physical education utilize this domain to draw conclusions about special programs. The following variables are used to classify those behaviors which can be included in the psychomotor domain.

1. FREQUENCY - rate or number of times an individual performs a psychomotor skill.
2. ENERGY - amount of strength or power an individual needs to perform a psychomotor skill.
3. DURATION - length of time an individual persists in performing a psychomotor skill.

TEST YOUR KNOWLEDGE
OF
THE PSYCHOMOTOR VARIABLES

In the following exercise, try to recall the three appropriate psychomotor variables. Write on the provided space to the left of each item the correct term for the psychomotor behavior.

____1. After having the opportunity to work with the Smith Method of Exercising, the student will show his persistence in exercising as indicated by his ability to press his finger tips together for a duration of three minutes.

____2. The student will demonstrate his competency in the Smith Method of Exercising by doing push-ups at a frequency of ten push-ups per minute.

____3. After having the opportunity to work with the Smith Method of Exercising, the student will have an increased energy capacity as indicated by the ability to press 250 pounds.

If you did not correctly identify the variables of the psychomotor domain, review the terms and definitions.

SUMMARY

You have now been exposed to SIX terms to describe Cognitive Behavior, FIVE items to describe Affective Behavior, and THREE terms that can be utilized in describing Psychomotor Behavior. Thus in applying the approach described for writing objectives, ONLY THESE FOURTEEN TERMS SHOULD BE USED IN DESCRIBING BEHAVIOR.

ONLY THESE 14

COGNITIVE	AFFECTIVE
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	

PSYCHOMOTOR

1. 2.

3.

TEST FOR CATEGORIZING BEHAVIOR

Directions: Classify each statement below by writing the correct letter in front of the statement according to the following scheme: Cognitive (C), Affective (A), Psychomotor (P).

The learner:

_____1. is able to accurately evaluate the best of two solutions to a geometry problem using standards given by the teacher.

_____2. responds with tolerance for others by displaying good manners toward those of minority groups.

_____3. knows the names and contributions of the five key curriculum workers as described in class.

_____4. properly knits a baby blanket, with a frequency of ten stitches per minute.

_____5. is willing to respond to the questions on the Minnesota Teacher Attitude Inventory.

_____6. applies instructional principles properly in planning daily lessons.

_____7. plays table tennis for a one-hour duration, beating three inexperienced girls 100% of the time.

_____8. comprehends the Gettysburg Address.

_____9. knows 80% of the words on a spelling quiz.

____10. displays a value for higher mathematics by attending lectures on this subject.

If you score eight or more correctly, continue; if you score less than eight correctly, review before continuing.

INSTRUCTIONAL DIMENSION

The Instructional Dimension describes the educational program in terms of specific variables. The first of these variables is Organization. Organization is described as the situation in which teachers and pupils are brought together in order that instruction can take place (i.e., self-contained classroom, departmentalization, non-graded, modular scheduling, etc.).

The second variable is Content. Content is that body of knowledge which is identified with the subject matter of a discipline. Content may be described in terms of specific topics to be covered at a given grade level (i.e., American History, Alegebra I, Auto Mechanics, Reading, etc.)

A third variable is Methodology. Methodology is described as the process which facilitates learning. It has three levels: teaching activities, types of interaction, and learning principles or theories utilized (i.e., lecture, demonstration, teacher-student interaction, team teaching, operant conditioning, programmed learning, etc.).

The fourth is Facilities. Facilities is described as the space, special equipment, and expendables needed to support an educational program (i.e., carpeting, listening posts, laboratory equipment, large room, etc.).

Cost, the fifth variable, is described as the money required for facilities, maintenance, and personnel to accomplish a given task.

VARIABLES OF INSTRUCTION

1. Organization
2. Content
3. Method
4. Facilities
5. Cost

TEST YOUR KNOWLEDGE
OF
THE INSTRUCTIONAL VARIABLES

Match the following (More than one answer in a blank if necessary.)

_____	1.	Organization	a. Field Trips
_____	2.	Content	b. Science Vocabulary
_____	3.	Method	c. Learning Centers
_____	4.	Facilities	d. $6.75/student
_____	5.	Cost	e. Mathematics Concepts
			f. Flexible Schedules
			g. Team Teaching
			h. Professional Libraries

INSTITUTIONAL DIMENSION

VARIABLES OF THE INSTITUTIONAL DIMENSION

- Student
- Teacher
- Administrator
- Educational Specialist
- Family
- Community

Every educational program will be influenced by the unique qualities for the individuals involved. Evaluation programs of the past have dealt primarily with the student and his achievement in a given subject area. With the changes taking place in instructional programs, more evidence is needed as to the influence of the teacher, administrator, parent, and community on a given program. All variables of the institutional dimension are people.

TEST YOUR KNOWLEDGE
OF
THE INSTITUTIONAL VARIABLES

Match the following (More than one answer in a blank if necessary.)

_____	1. Student	a.	Reading Coordinator
_____	2. Teacher	b.	Chamber of Commerce
_____	3. Administrator	c.	Fifth Grade Instructors
_____	4. Specialist	d.	Legal Guardian
_____	5. Family	e.	Primary Enrollees
_____	6. Community	f.	Principal
		g.	P.T.A.
		h.	Ninth Graders

TEST YOUR MEMORY

You have been introduced to fourteen terms describing behavioral variables, five terms describing instructional variables, and six terms describing institutional variables. See if you can correctly match the following items:

_____	1. Evaluation	A.	Affective
_____	2. Organization	P.	Psychomotor
_____	3. Receive	C.	Cognitive
_____	4. Comprehension		
_____	5. Duration		
_____	6. Knowledge		
_____	7. Application		
_____	8. Respond		
_____	9. Frequency		
_____	10. Value		
_____	11. Analysis		
_____	12. Characterization		
_____	13. Synthesis		
	14. Energy		

PART II

_____	1.	Knowledge	o. create or form new idea
_____	2.	Comprehension	n. judge or select
_____	3.	Application	s. break into parts
_____	4.	Analysis	t. recall or recognize
_____	5.	Synthesis	c. use in new situation
_____	6.	Evaluation	u. interpret or translate

PART III

_____	1.	Receive	E. compliance or obedience
_____	2.	Respond	R. internalization of values
_____	3.	Value	N. action consistent with values
_____	4.	Organization	L. to be aware
_____	5.	Characterization	A. belief and worth

PART IV

_____	1.	Frequency	A. length of performance
_____	2.	Energy	Y. number of performances
_____	3.	Duration	E. amount of strength utilized in performance

_____	1. Cognitive Domain Variables	A.	Behavioral Dimension
_____	2. Organization	B.	Instructional Dimension
_____	3. Student	C.	Institutional Dimension
_____	4. Content		
_____	5. Affective Domain Variables		
_____	6. Community		
_____	7. Cost		
_____	8. Facility		
_____	9. Teacher		
_____	10. Family		
_____	11. Method		
_____	12. Specialist		
_____	13. Administrator		
_____	14. Psychomotor Domain Variable		

If you have correctly answered thirty of the test items, you are ready to proceed. If you failed to reach this magic number, you are not responding as expected.

WRITING GOALS AND OBJECTIVES

The average adult after age twenty-one, learns approximately fifty new words to add to his vocabulary each year. To this point you have been exposed to fourteen words utilized in describing behavior, six words to describe the institutional variables, and five words to describe instructional variables. A total of twenty-five words. Wow, you may have completed a half-year's work.

Since you have been exposed to a description of goals and objectives, try your hand at writing a goal, and an objective in each domain of behavior. Roll up your sleeves and get with it.

Just remember to include the following items in your objectives:

1. Institutional Variable
2. Behavioral Variable
3. Instructional Variable
4. Measurement Technique

In the provided space, write a goal.

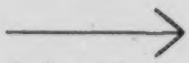
1. Institutional Variable
2. Behavioral Variable
3. Instructional Variable
4. Measurement Technique

↖ Watch out for these!

66

WRITING COGNITIVE OBJECTIVES

The student will be able to:



(a) display knowledge of

(b) display comprehension of

(c) demonstrate application of

(d) analyze (give an analysis)

(e) synthesize

(f) evaluate

(CONTENT)

as measured by

1. Self-report 2. Observation

1. Teacher tests
2. Standardized tests
3. Observation
4. Judgment

WRITING AFFECTIVE OBJECTIVES

The student will:

→

(a) receive
(b) respond (positively) (negatively) to
(c) display a value for
(d) display organization by
(e) display characterization by

→

Organization (school)
Content (subjects)
Methods (team teaching)
Facility (carpet, equipment, etc.)

→

as measured by

1. Self-report
2. Observation

(i.e.) Likert Scale
Semantic Differential
Standardized Test

GOAL

OBJECTIVE (Emphasize Cognitive Behavior)

OBJECTIVE (Emphasize Affective Behavior)

OBJECTIVE (Emphasize Psychomotor Behavior)

ELEMENTS AND VARIABLES IN BEHAVIORAL OBJECTIVES

I. Institutional

Student

Teacher

Administrator

Educational Specialist

Family Community

II. Instructional

Organization (refers to scheduled time and space)

Content (a topically defined body of knowledge, i.e. algebra, reading, government, etc.)

Method

1. Type of teaching activities, i.e. lecture, demonstration, et
2. Type of interaction, i.e. teacher-student, student-student, etc.
3. Learning principles or theories, i.e. operant conditioning etc.

Facilities (equipment, space, instructional process)

Cost (money spent in the educational process)

III. Behavioral

Cognitive Domain

Knowledge - involves the recognition and recall of facts and specifics.

Comprehension - the learner interprets, translates, summarizes or paraphrases given material.

Application - involves the use of material in a situation which is different from that situation in which it was originally learned.

Analysis - involves separating a complex whole into its parts, until the relationship among the elements is made clear.

Synthesis - involves combining elements to form a new original entity.

Evaluation - involves acts of decision-making, judging, or selecting based on a given set of criteria. (These criteria may be objective or subjective.)

Affective Domain

Receive - the learner is aware of or passively attending to certain phenomena and stimuli (i.e.,listening).

Respond - the learner complies to given expectations by attending or reacting to certain stimuli or phenomena (i.e., interests).

Value - the learner displays behavior consistent with a single belief or attitude in situations where he is not forced to comply or obey (i.e., internal commitment consistent with external behavior).

Organize - the learner is committed to a set of values as displayed by his behavior (i.e., successful internalization of values).

Characterize - the total behavior of the learner is consistent with the values he has internalized (i.e., philosophy of life -- totally behaving as you believe).

Psychomotor Domain

Imitation - when the learner is exposed to an observable action, he beings to make covert imitation of that action. Imitation begins with an inner rehearsal of muscular system that is guided by an inner push or an impulse to imitate action. Such covert behavior appears to be the starting point in the growth of psychomotor skill. This is then followed by overt performance of an act and capacity to repeat it. The performance, however, lacks neuromuscular coordination or control, and hence is generally in a crude and imperfect form.

Manipulation - emphasizes the development of skill in following direction, performance of selected action and fixation of performance through necessary practice. At this stage the learner is capable of performing an act according to instruction rather than just on the basis of observation as is the case at the level of imitation.

Precision - is the proficiency of performance that reaches a higher level of refinement in reproducing a given act. Here, accuracy, proportion and exactness in performance become significant. The next higher subcategory in this class of behaviors, goes a step further and makes the learner independent of his original source that guided his action.

Articulation - emphasizes the coordination of a series of acts by establishing appropriate sequence and accomplishing harmony or internal consistency among different acts.

Naturalization - a single act or a series of articulated acts. At this stage, the skill of performance attains its highest level of proficiency and the act is performed with the least expenditure of psychic energy. The act is routinized to such an extent that it results in automatic and spontaneous response.

IV. How Measured (Specific and precise description of the measurement procedure or activity)

V. Calendarization (The future point in time at which measurement will take place - 1 day, 1 week or 6 weeks)

VI. Criterion of Acceptability (The minimal amount of behavioral change which will be accepted as denoting institutional progress)

WRITING OBJECTIVES

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How shall we state instructional objectives? On what basis can we distinguish between a statement of objectives and a statement of procedures? Given an ambiguous objective, how does one proceed to change it to an operational definition of a task? At the end of this presentation, it is intended that one's responses to these questions will differ from those now available. The new responses will evidence greater specificity and demonstrate one's ability to write objectives in operational terms.

The subject of stating objectives is a timely one. The public is demanding increased achievement in schools and learning is more effective when instructional goals (objectives) are clear to teachers and pupils alike. Also, our failure to assess the results of instructional innovations and practices has been termed unethical.[1] We have responsibility to study the effects of our favorite, but largely tested, methods. Not to do so is to deceive learners. The stating of objectives is a first step toward the elimination of malpractice because objectives are guides to the selection of effects to be noted.

Briefly, acquisition of the skill of writing objectives will enable one (1) to increase achievement (personal, social, academic) on the part of learners, (2) to design test situations by which evidence of the effect of instructional procedures (e.g., a proposed project); a plan that satisfies reviewing officials that adequate provisions for evaluation of the project have been made before they grant funds.

A prerequisite to the task of writing objectives is the ability to recognize in a number of statements the presence or absence of these elements: (1) a situation or class of situations (givens); (2) an observable action on the part of the learner, i.e., selection, construction, oral pronouncement; and, when the response is not self-confirming, (3) an indication of the desired adequacy of the actions. Here, for example, is a behavioral objective:

> "Given any unfinished couplet, the learner will be able to select from corresponding sets of four

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[1]Ray H. Bixler, "Ostracise Them!", Saturday Review, July 2, 1966, pp. 47.

alternatives the one word, phrase or line which best completes the couplet." ("Best completion" means the selection has the qualities of rhythmic correspondence, end rhyme, and continuous thought.)

Notice in the objective above and in the one that follows that a behavioral objective need not be trivial or lacking in the power of applying to a wide range of instances.

"Given information regarding the economic, political, and military systems of any two countries, the learner will be able to identify fundamental similarities and differences." Must we define "Fundamental similarities and differences?"

The power of an objective is greater when the situation described (the givens) refers to a class of events rather than when the situation is an instance of a class.
Look at the following examples:

(a) Given any ar verb in Spanish, the learner will orally conjugate it in the preterit tense.

(b) Given the Spanish verb Hablar, the learner will orally conjugate it in the preterit tense.

If the instance (b) above has been drawn at random from the population of items inferred in (a), it could serve as a test for measuring attainment of the objective. Of course, (b) could serve as an objective in its own right although it would not be as powerful an objective as (a). Both (a) and (b) are behavioral.

A second way to increase the power of behavioral objectives is to demand a more complex response rather than a simple one. For example, recall of an item is more complex than identification of an item as indicated in the following two objectives:

(a) Given the letters, C, B, A, and the instruction "What is the name of each of these letters?", the child will name each letter.

(b) Given the letters, C, B, A, and the instruction, "Which letter is C, B, A?", the child will point out C, B, A, respectively.

There are two conclusions to be drawn from the above remarks: First, there can be levels of responses, and second, there is no loss in power or importance of an objective because it makes clear the kind of responses expected, e.g., the learner will recall, identify, provide new examples, and produce a work which exemplifies particular qualities as judged

by experts, as opposed to stating the response in nonbehavioral terms, e.g., the learner will "appreciate," "understand," or "comprehend."

The thought of specifying all behavioral tasks associated with a single lesson, to say nothing of a semester-long course of study or four-year program, has resulted in some avoiding to state any objectives. Perhaps this would not happen if a supervisor or teacher realized the economy of stating the terminal behavioral objectives sought rather than listing each subsumed task. For instance: "Given a 12-hour clock, the learner will be able to tell time for any position of the hand to the nearest hour." The learner's successful performance on the above task might suffice as evidence that he had acquired other objectives, such as: "Given a clock and asked to point to the 'big hand' he can do so," and "Given numerals from 1-12, the learner can name them." This is not to say that instruction will not be more effective when we can stipulate all prerequisite objectives for a learner's successful performance on a task.

Some confusion exists between statements of procedures or activities and instructional objectives. One will sometimes read statements from an administrator that his objective is to establish a non-graded classroom or to introduce a reading laboratory. Organizational arrangements, devices, programs, and the like are always means; never instructional ends. The questions to ask are: "What are learners expected to do as a result of the innovation?" "When confronted with what class of situations will learners respond differently than they now do?" "How will the response be evidenced?"

As indicated before, it is miseducative for an adminstrator to introduce educational innovations and not have instructional objectives for guiding him in the assessment of consequences. It is not rational for him to introduce innovations in the first place without having a good reason for believing that it will contribute to some desired changes in learners.

In the after-the-fact case, a curriculum leader must help the administrator infer and state behavioral objectives that he believes might be attained from the innovations. The inferring and stating of objectives from an ongoing arrangement or activity is a useful step in planning for its evaluation. For instance, when pressed as to how he expected a taped auditory discrimination training program to change the performance of learners, an administrator said: "When confronted with the problem of attaching sounds (phonimes) to printed letters (graphemes), children will make ten percent fewer errors than those who have not undergone the training."

The administrator is not the only one who sometimes confuses *means and ends*. The teacher has been known to view classroom activities as ends rather than means. Part of the confusion occurs because we tend to ask the teacher, "What are you teaching today?" or "What is your class doing today?" This kind of question invites an answer such as "listening to poetry," "writing compositions," or "We are going to discuss some subject matter topic such as the causes of the American Revolution or the effects of cyclones and anti-cyclones."

The question to ask is: "As a result of the activity today, what is it that the learner will be able to do that he could not do before the activity?" The reply should mention the situation with which learners can expect to be confronted and the quality of responses to be made as a result of instruction, i.e., an instructional objective.

In practice, statements of activity as opposed to statements of objectives lack an indication of what constitutes an accepted response or action on the part of the learner:

(a) the pupils will investigate a given problem
(b) the pupils will identify value judgements as opposed to factual matters in problematic situations

Statement (a) above is vague about how one would recognize a pupil who was "investigating," and the statement also does not indicate what standards (number and kind) of actions taken by learners will be acceptable.

There is obviously a close relationship between an objective and an activity. An activity should give opportunity for the learner to practice the behavior called for in the objective. Usually, however, a statement of an activity does not limit the situation as does an objective (e.g., the teacher may give unplanned prompting and corrections during the teaching situation; whereas the objective defines the situation or class of situations more rigorously.) Statements of intended activity or procedure usually describe what the teacher and pupils will do to bring about an objective or outcome:

(a) Pupils will read poetic protests against social conditions using materials such as: "The Man with the Hoe," by Markham and "Factory Children," by E. Browning.

(b) Given two poems of poetic protest, pupils will state what the protests were about and identify the techniques used by the poet in arousing emotions.

In the above statement of procedure (a) we are not clear as to the intended outcome. It is desired that learners show improvement in skills or oral reading; familiarity with the nature and cause of social protests in the past; or produce new instances of figurative expression and allusions. Statement (b) is a clear objective.

The statement of procedure may include a description of the planned situations (givens), including a sequence of activities and observable actions to be demanded of the learner en route to an objective. A statement of procedure may describe a teacher and his pupils' actions during the instruction phase; a statement of an objective describes what the learner is able to do at the end of instruction. Look at the following list and see if you can state which items are statements of objectives and which are statements of procedures:

(a) The teacher will describe four economic theories and provide examples of each.

(b) The learner will multiply correctly an 2 two-digit numbers.

(c) Given a collection of seeds, learners will be asked to observe how they are sorted by specimen.

(d) When asked to rewrite any composition to minimize the agent, the learner will change the active voice to the passive voice.

(e) In accordance with their required needs and abilities, learners will be given varied opportunities to explore contributions made by people of various races.

If you were correct, you selected as objective statements (b) and (d); (a), (c), and (e) are procedures.

By way of review, we have said that an objective has three elements: a situations stated or implied; and observable response in terms of the learner; and an indicator of what constitutes an adequate response. The indicator may also be implied or may have to be made explicity by adding another sentence or two.

With respect to describing the observable response, you will note that some terms are less subject to misinterpretation than others. They lend themselves to behavioral objectives. Identify the terms in the following list that are subject to fewer interpretations:

(a) to locate
(b) to know
(c) to receive graciously
(d) to produce a plan that meets specific criterion
(e) to create
(f) to solve
(g) to list
(h) to evaluate
(i) to order
(j) to grasp the meaning
(k) to compare
(l) to comprehend
(m) to identify

The correct choices for the problems above are: (a), (d), (f), (g), (i), (k), (m).

Which of the following statements do not have the elements of an instructional objective?

(a) The pupils will learn the parts of speech.
(b) The pupils will understand the use of the period, comma, and exclamation point.
(c) The learner beats the correct time with his hands when presented with the reading of a poem that has obvious repetition and when told to do so.

The deficient statements are (a) and (b) above. Try now to modify the statements above so that they meet the criterion for operational statements of instructional objectives.

EVALUATION (EXAMINATION)

The instructional unit (units) each student constructs will serve as an examination. It can be compared to the general objectives to see how well the student performed. However, in a "standard" test either teacher-made or otherwise, the teacher should know which objective a test question is testing. Therefore, in the instructional unit the student makes he would be required to show on the test he attaches to the unit which general objective or objectives each test question is testing. Particular attention should be paid to the affective domain.

Grading, if not impossible, is always hard. In order to grade my unit I would have to answer these questions about it. I am going to answer yes or no. However, it would be possible to place a grade of A, B, C, etc. in place of the yes or no.

1. Does this unit show planning? Yes -- objective 1
2. Does this unit show a knowledge of need and value of behavioral objectives? Yes -- objective 2
3. Does the prepared instructions (class procedure) help read desired objectives? Yes -- objective 10
4. Did the student use performance verbs? Yes -- objective 4
5. Does the unit show a knowledge of behavioral domains and variables? Yes -- objective 5

6. Does the unit show a knowledge of instruction dimensions? Yes -- objective 6
7. Does the unit show a knowledge of institutional dimension? Yes -- objective 7
8. Is the goal, general objectives, and behavioral objectives properly written? Yes -- objective 8, objective 3
9. Is the program structured to the needs and ability of the students? Yes -- objective 9
10. Was an instructional unit prepared? Yes -- objective 10

Date _____ Teacher _____

EVALUATION OF INSTRUCTOR'S OBJECTIVES

*Write in the space below the teacher's objective (5) just as stated. If no objective (s) is/are stated, write none. If the objective is not stated clearly, please comment.

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After the lesson, circle one alternative only.

1. Was the teacher's objective stated in behavioral terms?
   Yes -- Not sure -- No

2. Did the teacher make clear in his objective (s) what he would accept as minimum acceptable performance?
   Yes -- Not sure -- No

3. Did the teacher assess our knowledge of the specific behavior(s) before instruction?
   Yes -- Not sure -- No

4. Did the teacher present the preceived purpose in such a way as to capture my attention and interest?
   Yes -- Not sure -- No

*This test may be used to evaluate the teacher not only for a single lesson, but also for an instructional unit.

5. Did the teacher begin with logical material and then move to harder material?
   Yes -- Not sure -- No

6. Did he seem to know when I was confused and help to reduce my confusion?
   Yes -- Not sure -- No

7. Did the teacher give me a chance to practice the behavior called for in the objective?
   Yes -- Not sure -- No

8. During my practice of the behavior did he indicate when I was performing correctly?
   Yes -- Not sure -- No

9. At the end of the lesson or course, did he obtain evidence as to whether I could perform the desired behavior?
   Yes -- Not sure -- No

10. Could I perform the behavior at the minimum acceptable level?
    Yes -- Not sure -- No

Comments:

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